Part 1

The Basics

In this part:

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- **Chapter 2: Creating Your First Drawing**
- **Chapter 3: Setting Up and Using AutoCAD's Drafting Tools**
- **Chapter 4: Organizing Objects with Blocks and Groups**
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Chapter 1

Exploring the AutoCAD and AutoCAD LT Interface

Before you can start to use AutoCAD 2009's new capabilities, you'll need to become familiar with the basics. If you're completely new to AutoCAD, you'll want to read this first chapter carefully. It introduces you to many of AutoCAD's basic operations, such as opening and closing files, getting a close-up look at part of a drawing, and changing a drawing. If you're familiar with earlier versions of AutoCAD, you should review this chapter anyway to get acquainted with the features you haven't already used.

Autodesk releases new versions of AutoCAD every year. Part of this strategy is to introduce improvements that focus on a particular category of features. This latest version, AutoCAD 2009, includes several new features focused on the user interface. AutoCAD now sports a new tool panel called the *Ribbon*, which includes the most common tools needed to produce technical drawings of all types. There is more information available on every tool, making this version of AutoCAD one of the easiest to learn. All you have to do is hover your cursor over a tool or menu option to find out what it's for and how to use it.

You'll get a chance to explore these new features as you work through this book. Before you begin the exercise later in this chapter, make sure that you have downloaded the sample files for this book. See the Introduction for details.

Let's get started with some basics.

This chapter includes the following topics:

- Using the AutoCAD Window
- Opening an Existing File
- Getting a Closer Look with the Zoom Command
- Saving a File As You Work
- Making Changes and Opening Multiple Files

Taking a Guided Tour

In this section, you'll get a chance to familiarize yourself with the AutoCAD screen and how you communicate with AutoCAD. As you do the exercises in this chapter, you'll also get a feel for how to work with this book. Don't worry about understanding or remembering everything you see in this chapter. You'll get plenty of opportunities to probe the finer details of the program as you work through the later chapters. To help you remember the material, you'll find a brief set of questions at the end of each chapter. For now, just enjoy your first excursion into AutoCAD.

NOTE

In this chapter, and throughout the rest of the book, when I say AutoCAD, I mean both AutoCAD and AutoCAD LT. Some topics apply only to AutoCAD. In those situations, you'll see an icon indicating that the topic applies only to AutoCAD and not to AutoCAD LT. If you're using AutoCAD 2009 LT, these icons can help you focus on the topics that are more relevant to your work.

NOTE

AutoCAD 2009 is designed to run on Windows XP and Windows Vista. This book was written using AutoCAD 2009 running on Windows XP Professional.

If you already installed AutoCAD and are ready to jump in and take a look, proceed with the following steps to launch the program:

1. Choose Start ➢ All Programs ➢ Autodesk ➢ AutoCAD 2009 ➢ AutoCAD 2009. You can also double-click the AutoCAD 2009 icon on your Windows Desktop. LT users will use AutoCAD LT 2009 in place of AutoCAD 2009.
2. The opening greeting, called a *splash screen*, tells you which version of AutoCAD you're using, to whom the program is registered, and the AutoCAD dealer's name and phone number, should you need help. If this is the first time you've started AutoCAD after installing it, you'll also see a dialog box asking you to register the product.
3. You may also see the New Features Workshop screen, which offers a set of tutorials showing you the new features of AutoCAD 2009. Click the No, Don't Show Me This Again or Maybe Later radio button, and click OK. You can always get to the New Features Workshop screen from the AutoCAD Help menu in the Menu Browser.
4. The AutoCAD window displays a blank default document named `Drawing1.dwg`, as shown in Figure 1.1. Although it doesn't appear in Figure 1.1, to show more of the drawing area, AutoCAD users may see the Sheet Set Manager palette to the left of the AutoCAD window. LT users may see the Info palette to the left of the AutoCAD window.

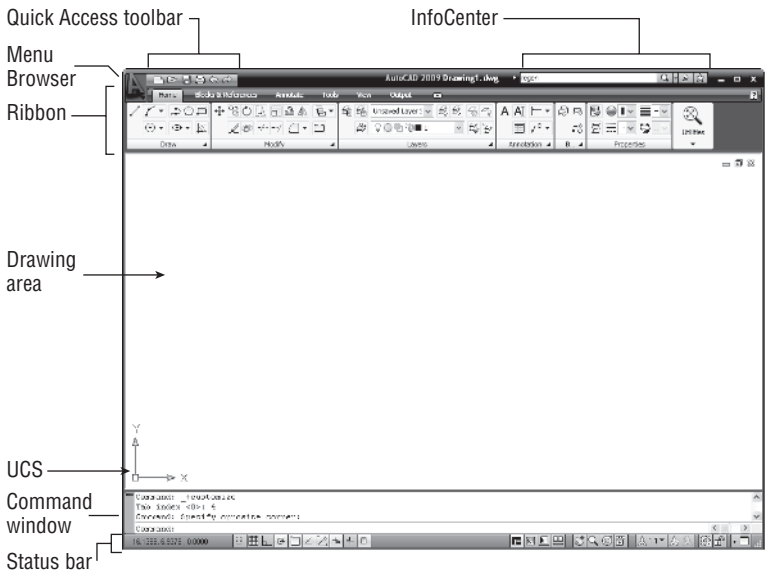


FIGURE 1.1
A typical arrangement of the elements in the AutoCAD window. The Sheet Set Manager palette (or Info palette for LT) is closed for clarity.

If this is the first time you've started AutoCAD since you installed it, you're asked to register and authorize AutoCAD in step 2. If you're using the trial version, you can use the default serial number 000-00000000 for the one-month trial. After you've entered the registration information, you see the New Features Workshop window described in step 3.

Let's look at the AutoCAD window in detail. Don't worry if it seems like a lot of information. You don't have to memorize it, but by looking at all the parts, you'll be aware of what is available in a general way.

The AutoCAD Window

The AutoCAD program window is divided into six parts:

- Menu Browser
- Quick Access toolbar
- Ribbon
- Drawing area
- Command window
- Status bar

Figure 1.1, shown earlier in this chapter, shows a typical layout of the AutoCAD program window. Along the top is the *Quick Access toolbar*, and just below that is the Ribbon. At the bottom are the *Command window* and the *status bar.* The *drawing area* occupies the rest of the screen. You can organize the AutoCAD window into any arrangement you want and save it as a *workspace*. You can save and recall a workspace at any time using the Workspace Switching tool in

the status bar (you'll learn more about this tool in the next chapter). The default workspace in Figure 1.1 is called the 2D Drafting & Annotation workspace, which is one of two workspaces that come built into AutoCAD.

Figure 1.2 shows AutoCAD's 3D Modeling workspace, which has a different set of screen elements. Figure 1.2 also shows a standard AutoCAD drawing file with a few setting changes to give it a 3D appearance. Beneath these external changes, the underlying program is the same.

NOTE

You'll learn more about workspaces later in this chapter and in Chapter 26.

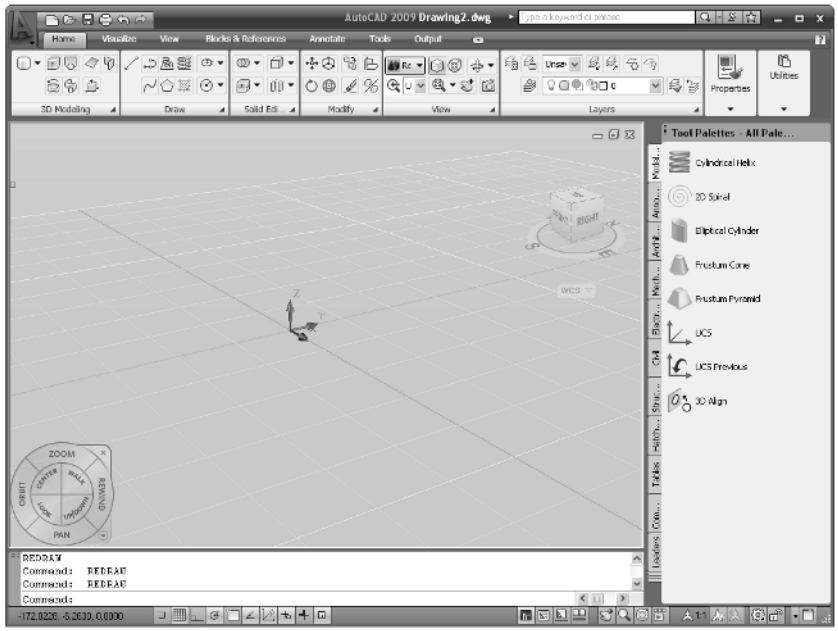


FIGURE 1.2
The 3D Modeling workspace offers an alternative arrangement of the elements in the AutoCAD window.

The Quick Access toolbar at the top of the drawing area (as shown in Figure 1.3) includes the basic file handling functions that you find in nearly all Windows programs. The Ribbon provides nearly all the commands you'll need using icon tools. In the upper-left corner, the red AutoCAD icon features the Menu Browser, which is like a navigation panel offering many of the same commands as the Ribbon panel.

The drawing area occupies most of the screen. Everything you draw appears in this area. As you move your mouse around, crosshairs appear to move within the drawing area. This is the drawing cursor that lets you point to locations in the drawing area.

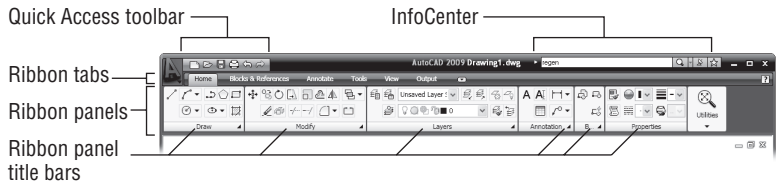


FIGURE 1.3
The Quick Access toolbar, featuring basic Windows file handling functions, appears above the Ribbon, to the right of the Menu Browser.

The Command window, located just below the drawing area, gives you feedback about AutoCAD's commands as you use them. You can move and resize this window just as you move and resize other display components. By default, the Command window is in its docked position, as shown in Figure 1.4.

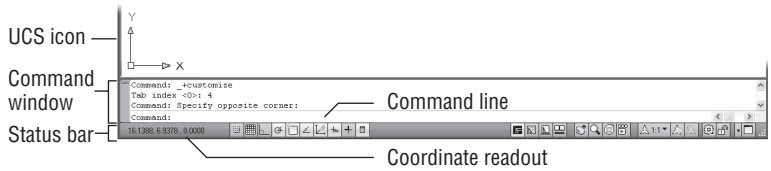


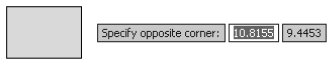
FIGURE 1.4
The Command window and the status bar

Below the Command window is the status bar (see Figure 1.4). The status bar gives you information at a glance about the state of the drawing. For example, the coordinate readout at the far left of the status bar tells you the location of your cursor. The tools in the status bar offer aids to the drafting process.

PICKING POINTS IN THE DRAWING AREA

Now that you've seen the general layout of AutoCAD, take a look at the coordinate readout and the drawing cursor to get a sense of how the parts of the AutoCAD screen work together:

1. Move the cursor around in the drawing area. As you move it, notice how the coordinate readout changes to tell you the cursor's location. It shows the coordinates in an X, Y, Z format.
2. Place the cursor in the middle of the drawing area, and click the left mouse button. Move the cursor and a rectangle follows. This is a *window selection*; you'll learn more about this window in Chapter 2. You also see a coordinate readout following the cursor and a message asking you to `Specify opposite corner:`. This display at the cursor is called the *dynamic input*. You'll learn more about it a little later in this chapter.



NOTE

If you don't see the Dynamic Input display, click the Dynamic Input tool in the status bar to turn it on.

3. Move the cursor a bit in any direction; then, click the left mouse button again. Notice that the window selection disappears, as does the Dynamic Input display.
4. Try picking several more points in the drawing area. Notice that as you click the mouse, you alternately start and end a window selection.

If you happen to click the right mouse button, a shortcut menu appears. A right-click frequently opens a menu containing options that are *context sensitive.* This means the contents of the shortcut menu depend on the location where you right-click as well as the command that is active at the time. If there are no appropriate options at the time of the right-click, AutoCAD treats the right-click as an ↵. You'll learn more about these options as you progress through the book. For now, if you happen to open this menu by accident, press the Esc key to close it.

The UCS Icon

In the lower-left corner of the drawing area, you see an L-shaped arrow. This is the *User Coordinate System (UCS)* icon, which tells you your orientation in the drawing. This icon becomes helpful as you start to work with complex 2D drawings and 3D models. The X and Y arrows indicate the X and Y axes of your drawing. The little square at the base of the arrows tells you that you're in what is called the *World Coordinate System (WCS).* Chapter 21 discusses this icon in detail. For now, you can use it as a reference to tell you the direction of the axes.

IF YOU CAN'T FIND THE UCS ICON

The UCS icon can be turned on and off, so if you're on someone else's system and you don't see the icon, don't panic. If you don't see the icon or it doesn't look as it does in this chapter, see Chapter 21 for more information.

The Command Window

At the bottom of the screen, just above the status bar, is a small horizontal window called the *Command window.* Here, AutoCAD displays responses to your input. By default, it shows two lines of text. The bottom line shows the current messages and the top line shows messages that have scrolled by or, in some cases, components of the current message that don't fit in a single line. Right now, the bottom line displays the message `Command` (see Figure 1.4, earlier in this chapter). This *prompt* tells you that AutoCAD is waiting for your instructions. When you click a

point in the drawing area, you see the message `Specify opposite corner:`. At the same time, the cursor starts to draw a window selection that disappears when you click another point. The same message appears in the Dynamic Input display at the cursor.

As a new user, pay special attention to messages displayed in the Command window and the Dynamic Input display because this is how AutoCAD communicates with you. Besides giving you messages, the Command window records your activity within AutoCAD. You can use the scroll bar to the right of the Command window to review previous messages. You can also enlarge the window for a better view. (Chapter 2 discusses these components in more detail.)

Now, let's look at AutoCAD's window components in detail.

NOTE

The Command window and the Dynamic Input display allow AutoCAD to provide text feedback on your actions. You can think of these features as a chat window to AutoCAD—as you enter commands, AutoCAD responds with messages. As you become more familiar with AutoCAD, you may find you don't need to rely on the Command window and Dynamic Input display as much. For new and casual users, however, the Command window and Dynamic Input display can be helpful in understanding what steps to take as you work.

The Menu Browser

The Menu Browser is a bit like the Folders view in the Explore bar of Windows Explorer. It displays the different categories of commands in a vertical column. Click on a category and the list expands to show more options. Try it out to see how it works firsthand.

1. Click the Menu Browser icon and then point to the View option. The list of items that appears includes the commands and settings that let you control the way AutoCAD displays your drawings (see Figure 1.5). Don't worry if you don't understand them yet; you'll get to know them in later chapters.

NOTE

LT users won't see the Render option in the View menu.

2. Move the highlight cursor slowly down the list of view options in the right-hand column. As you highlight some of the options, notice that a tool tip appears just below. These tool tips help you choose the menu option you need. Other items that show an arrowhead to the left will expand to show more options when you click on them (see Figure 1.5).

NOTE

If you look carefully at the command descriptions in the tool tip, about halfway down you'll see an odd word with an icon to the left. This is the keyboard command equivalent to the highlighted option in the menu. You can type these keyboard commands to start the tool or menu item that you're pointing to. You don't have to memorize these command names, but knowing them will be helpful to you later if you want to customize AutoCAD.

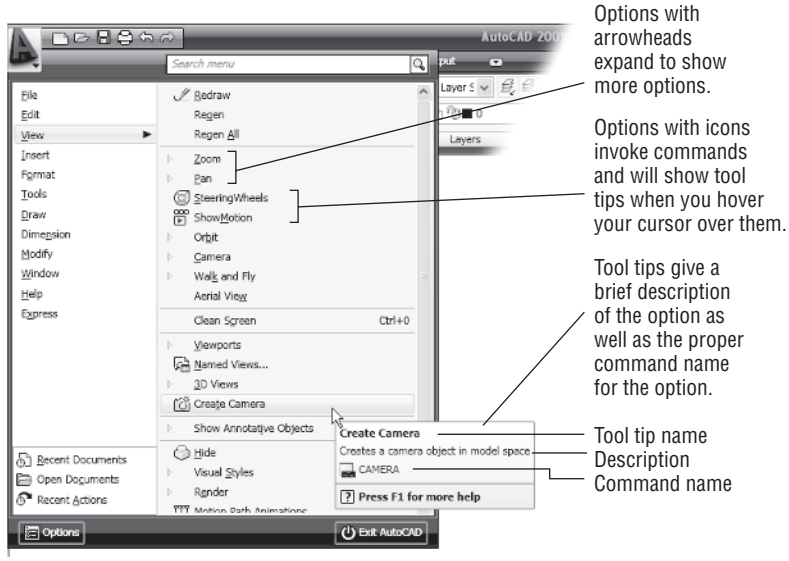


FIGURE 1.5
The View option in the Menu Browser showing a typical tool tip

3. Some of the menu items have triangular arrowheads to their left. This means the option has additional choices. For instance, click on the Zoom option and another set of options appears below it. This new set of options is called a *cascading menu*. Whenever you see a menu item with the triangular pointer, you know that this item opens a cascading menu offering a more detailed set of options.

4. Other menu options are followed by an ellipsis (…). This indicates that the option displays a dialog box. For instance, move the highlight cursor to the Named View option in the Menu Browser's View option. The View Manager dialog box appears.

5. Click Cancel to exit the dialog box.

In addition to offering most of the AutoCAD commands, the Menu Browser gives you a convenient way to find recently used commands and files. If you look at the bottom of the Menu Browser, you'll see three items: Recent Documents, Open Documents, and Recent Actions, as shown in Figure 1.6. If you point to or click on an option, the panel to the right changes to show you a list pertaining to it. For example, if you point to Recent Documents, the panel to the right displays a list of files on which you have recently worked.

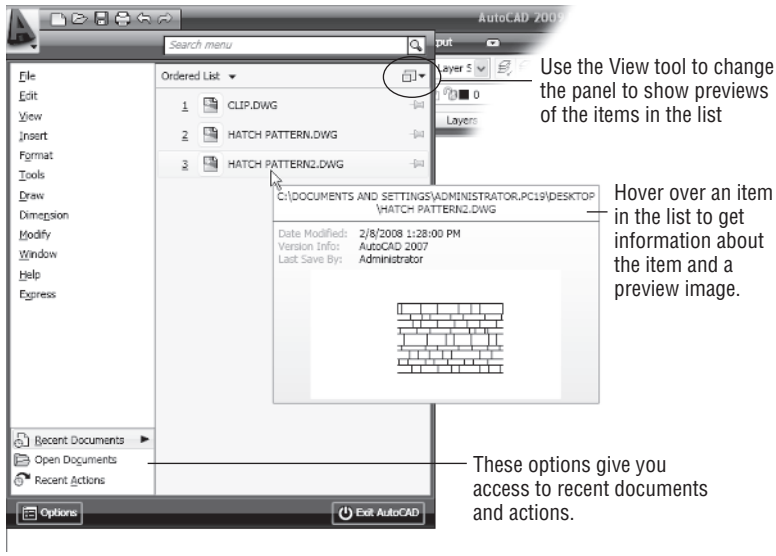


FIGURE 1.6
Options at the bottom of the Menu Browser give you ready access to recent files and actions.

You can use the View tool in the upper-right portion of the Menu Browser to select the way the list of files are displayed in a manner similar to the way you would use the Windows Explorer Views option. You can click on this icon and select Medium Images to have the list display the files with thumbnail images of their content. Hover over a file name and you will see a tool tip that displays a larger thumbnail of the drawing.

The Open Documents option lets you quickly change from one open file to another when you are viewing your files full screen. Finally, the Recent Actions option lists recent activity in the Menu Browser. You can repeat an action you've performed through the Menu Browser by selecting from this list. This is a handy tool if you are performing repetitive tasks, though you have to remember to start the task from the Menu Browser before they will become available under the Recent Actions option.

COMMUNICATING WITH THE COMMAND WINDOW AND DYNAMIC INPUT DISPLAY

AutoCAD is the perfect servant: It does everything you tell it to and no more. You communicate with AutoCAD by using tools and menu options. These devices invoke AutoCAD commands. A *command* is a single-word instruction you give to AutoCAD telling it to do something, such as draw a line (the Line tool in the Draw Ribbon panel) or erase an object (the Erase tool in the Modify Ribbon panel). Whenever you invoke a command, by either typing it or selecting a menu or tool, AutoCAD responds by presenting messages to you in the Command window and the dynamic input display or by displaying a dialog box.

The messages in the Command window, or in the Dynamic input display, often tell you what to do next, or they may display a list of options. A single command often presents a series of messages, which you answer to complete the command. These messages serve as an aid to new users who need a little help. If you ever get lost while using a command or forget what you're supposed to do, look at the Command window for clues. As you become more comfortable with AutoCAD, you'll find that you won't need to refer to these messages as frequently.

As an additional aid, you can right-click to display a context-sensitive shortcut menu. That is, if you're in the middle of a command, this menu displays a list of options specifically related to that command. For example, if you right-click your mouse before picking the first point for the rectangle command, a menu opens, displaying the same options that are listed in the Command prompt plus some additional options.

Finally, the Dynamic input display allows you to enter dimensional data of objects as you draw them. Besides echoing the command-line messages, the Dynamic input display shows temporary dimensions, coordinates, and angles of objects you're drawing and editing. As you enter coordinate or angle values through the keyboard, they appear in the Dynamic Input display. You can easily turn the Dynamic Input display on or off by clicking on the Dynamic Input tool in the status bar. When the Dynamic Input display is turned off, your keyboard input appears in the Command window.

The Ribbon

The most prominent feature in the AutoCAD window, besides the drawing area, is the Ribbon (see Figure 1.7). This is where you'll be selecting tools to draw, edit, or perform other functions. The Ribbon contains a set of panels representing groups of tools and features. The name of each Ribbon panel is found in its title bar at the bottom of the panel. Ribbon panels are further organized by the tabs that appear above them. All of the tools in the Ribbon offer *tool tips* that provide a short description to help you understand what each tool icon represents.

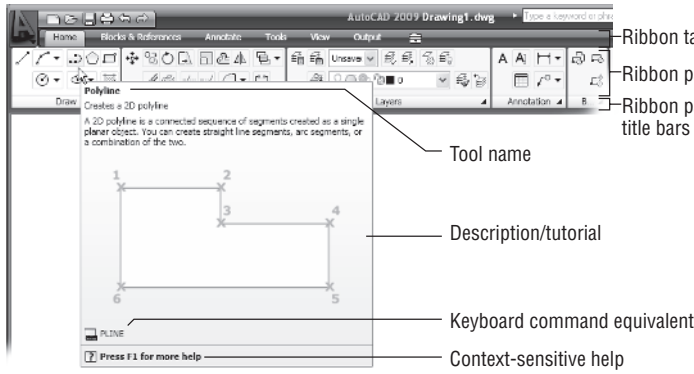


FIGURE 1.7
A typical tool tip from a Ribbon panel tool.

NOTE

If you see only the Ribbon tabs, right-click on one of the tabs and choose Minimize ➢ Show Full Ribbon. If you don't even see the tabs, press the Esc key twice and type **Ribbon** ↵.

Move the arrow cursor onto one of the Ribbon panel tools and leave it there for a moment; you'll see a tool tip appear just below the cursor. Hold the cursor there a bit longer and the tool tip changes to give you even more information about the tool.

In most cases, you'll be able to guess what each tool does by looking at its icon. The icon with an arc in the Draw Ribbon panel, for instance, indicates that the tool draws arcs; the one with the circle shows that the tool draws circles; and so on. For further clarification, the tool tip gives you the name of the tool.

As a new user, you'll find these tool tips helpful because they show you the name of the tool and a brief description of how to use it. Typically, when I ask you to select a tool, I'll use the name shown in the tool tip to help you identify the tool. In the case of a tool with flyouts, the tool name changes under different conditions. For those tools, I'll describe the tool using a general description. You'll learn more about flyouts a bit later in this chapter.

NOTE

As you work through this book, I will ask you to select tools from the Ribbon panels. You'll often be asked to switch between different tabs to select tools from other sets of panels. To make the process simpler to read, I'll use a somewhat abbreviated description of a tools location. For example, to use the Line tool, I'll say, "Click the Line tool from the Home tab's Draw panel." To use the Move tool, I'll say, "Click the Move tool in the Home tab's Modify panel," and so on.

EXPANDING PANELS

In addition to the visible tools, a few tools are hidden from view. You can expand many of the Ribbon panels to select more tools. If you see an arrowhead to the right of a panel's title bar, you can click the title bar to expand the panel (see Figure 1.8). The set of tools expands to reveal some additional tools. If you click in the drawing area, the expanded panel shrinks back to its original size. As an alternative, you can click the pushpin icon in the expanded panel title bar to lock the panel in its open position.

NOTE

From now on, I'll refer to the location of additional tools as the "expanded panel." For example, I'll say, "Click the Ray tool in the expanded Draw panel" when I want you to select the Ray tool.

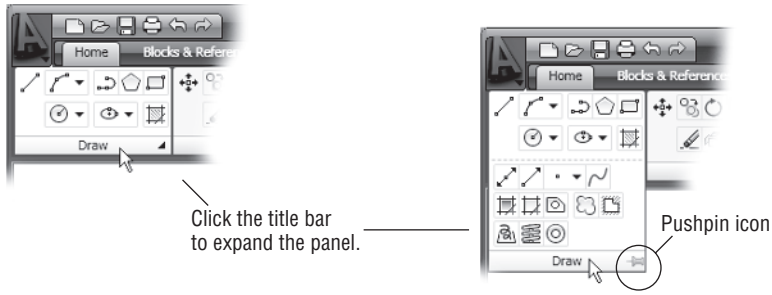


FIGURE 1.8
The arrowhead in the panel title bar tells you that additional tools are available.

UNDERSTANDING FLYOUTS

One more feature you'll want to know about are the *flyouts*. Flyouts are similar to the expanded panels because you can click on an arrowhead to gain access to additional tools. Instead of a whole panel, however, flyouts give you access to different methods for using a particular tool. For example, AutoCAD lets you draw circles in several different ways so it offers a flyout for the Circle tool in the Home tab's Draw panel. If you click the arrowhead next to the circle icon in the Draw panel, you'll see additional tools for drawing circles (see Figure 1.9).

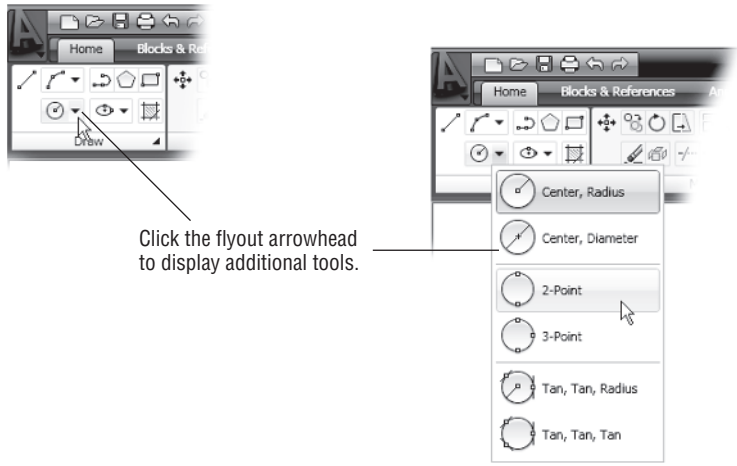
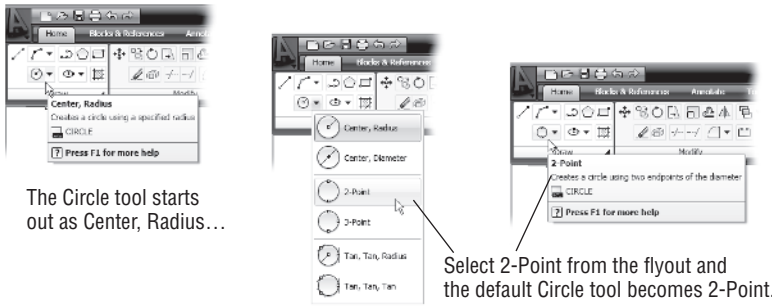


FIGURE 1.9
Flyouts

If you select a tool option from a flyout, that option becomes the default tool for that icon. For example, if you hover your cursor over the circle icon in the Draw panel, you'll see that the tool tip shows "Center, Radius" for the tool's name. If you click the arrowhead next to the Center, Radius tool and select 2-Point, then 2-Point becomes the default tool and you'll see "2-Point" for the name of the tool in the tool tip (see Figure 1.10).

FIGURE 1.10
The tool with a flyout will change to the last tool used.

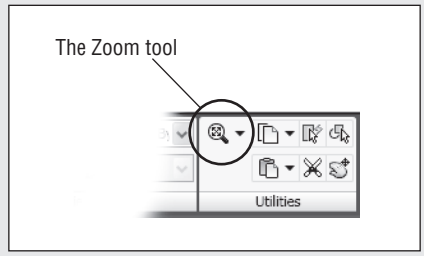


The Circle tool starts out as Center, Radius…

Select 2-Point from the flyout and the default Circle tool becomes 2-Point.

NOTE

Since the tool tip names of tools with flyouts can change, describing them by name can be a bit problematic—the name may have changed based on the last tool you used from a flyout. For this reason, if a tool has a flyout, I'll refer to it by a general name that is related to the set of tools in a flyout rather than by the tool tip name. For example, I'll call the circle icon tool the Circle tool rather than the Center, Radius tool. Likewise, I'll refer to the magnifying glass icon in the Utilities panel as the Zoom tool instead of the Extents tool.



The Toolbars

Between the Ribbon and the Menu Browser, you'll be able to find nearly every tool you'll need. At times, however, you may want readily available on the screen a set of tools that is geared toward a specific task. AutoCAD offers a number of toolbars that contain tools for specific types of drawing functions. For example, the View toolbar offers a set of tools that quickly give you a 3D view. The Inquiry toolbar contains tools that display information about your drawing.

As you work though this book, occasionally you'll be asked to open other toolbars. To get familiar with the process, try opening and closing one now.

1. Right-click in a blank area of the Quick Access toolbar and select Toolbars ➢ AutoCAD ➢ Dimension. The Dimension toolbar appears in the drawing area (see Figure 1.11).

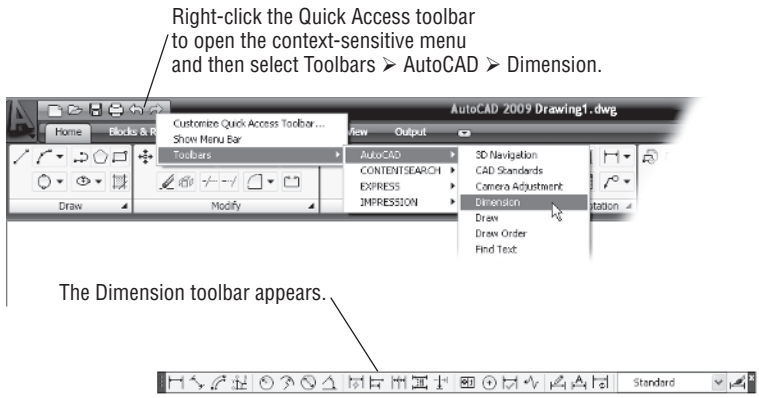


FIGURE 1.11 The Quick Access toolbar

2. You won't need the Dimension toolbar right now, so go ahead and close it by clicking the X in the upper-right corner of the toolbar.

AutoCAD remembers your toolbar arrangement between sessions. When you exit and then reopen AutoCAD later, the AutoCAD window appears just as you left it.

TOOLS VERSUS THE KEYBOARD

Throughout this book, you'll be told to select tools from the Ribbon panels to invoke commands. For new and experienced users alike, the Ribbon panels offer an easy-to-remember method for accessing commands. If you're an experienced AutoCAD user, you can type commands directly from the keyboard. Most of the keyboard commands you know and love still work as they did before.

Another method for accessing commands is to use *accelerator keys*, which are special keystrokes that open and activate drop-down menu options. You may have noticed that the commands in the menu bar and the items in the drop-down menus all have an underlined character. By pressing the Alt key followed by the key corresponding to the underlined character, you activate that command or option without having to engage the mouse. For example, to choose File ➢ Open, press Alt, then F, and then finally O (Alt+F+O).

Many tools and commands have keyboard shortcuts. *Shortcuts* are one-, two-, or three-letter abbreviations of a command name. As you become more proficient with AutoCAD, you may find these shortcuts helpful. As you work through this book, the shortcuts will be identified for your reference.

Finally, if you're feeling adventurous, you can create your own accelerator keys and keyboard shortcuts for executing commands by adding them to the AutoCAD support files. Chapter 26 discusses how to customize menus, Ribbon panels, toolbars, and keyboard shortcuts.

Working with AutoCAD

Now that you've been introduced to the AutoCAD window, you're ready to try using a few AutoCAD commands. First you'll open a sample file and make a few modifications to it. In the process, you'll become familiar with some common methods of operation in AutoCAD.

Opening an Existing File

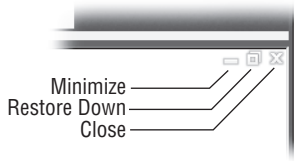
In this exercise, you'll get a chance to see and use a typical Select File dialog box.

NOTE

Before you start, make sure you have downloaded and installed the sample files for this book from the Sybex website. See the introduction for instructions on how to find and download the sample files.

To start, you'll open an existing file:

1. Click the close icon in the upper-right corner of the drawing area. It looks like an *X*.



   A message appears, asking whether you want to save the changes you've made to the current drawing. Click No.

2. Click the Open tool in the Quick Access toolbar to open the Select File dialog box. This is a typical Windows file dialog box, with an added twist: In the large Preview box on the right, you can preview a drawing before you open it, thereby saving time while searching for files. To the left is a panel known as the Places list in which you can find frequently used locations on your computer or the Internet (see Figure 1.12).

NOTE

If you don't see a Preview box in the Select File dialog box, click the word *Views* in the upper-right corner and select Preview from the list that appears.

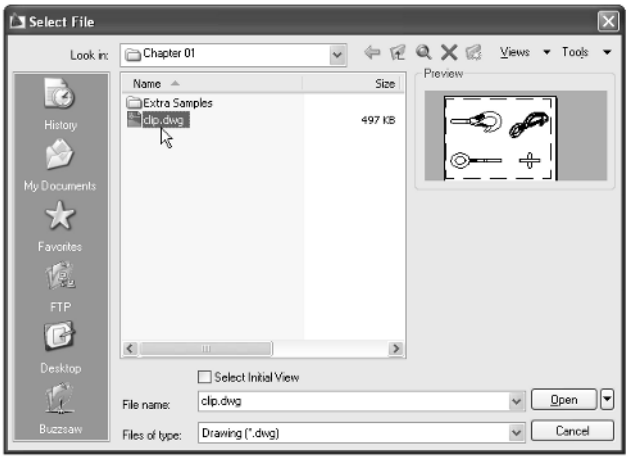


FIGURE 1.12
The Select File dialog box

3. In the Select File dialog box, open the Look In drop-down list and locate the `Chapter 01` folder of the Mastering AutoCAD 2009 sample files. (You may need to explore the list to find it.)
4. Move the arrow cursor to the `clip.dwg` file and click it. Notice that the `clip.dwg` filename now appears in the File Name input box above the file list. The Preview box also now shows a thumbnail image of the file. Be aware that files from older versions of AutoCAD may not show a thumbnail.
5. Click the Open button at the bottom of the Select File dialog box. AutoCAD opens the `clip.dwg` file, as shown in Figure 1.13.

The `clip.dwg` file opens to display a *layout* view of the drawing. A layout is a type of view in which you lay out different views of your drawing in preparation for printing. You can tell you are in a layout view by the white area over the gray background. This white area represents your drawing on a printed page. This view is like a print preview.

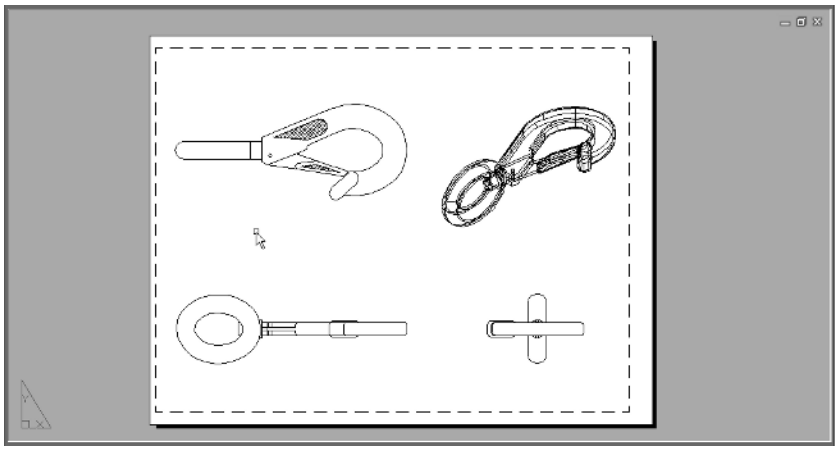


FIGURE 1.13
The Layout1 view of the `clip.dwg` file

Also note that the AutoCAD window's title bar displays the name of the drawing. This offers easy identification of the file.

This particular file contains both 2D drawings and a 3D model of a typical locking clip. The Layoutview shows a top, front, and right-side view as well as an isometric view.

Getting a Closer Look

One of the most frequently used commands is Zoom, which gives you a closer look at part of your drawing. This command offers a variety of ways to control your view. In this section, you'll enlarge a portion of the clip drawing to get a more detailed look. To tell AutoCAD which area you want to enlarge, you use what is called a *zoom window.*

You'll start by switching to a Model Space view of the drawing. The Model Space view places you in a workspace where you do most of your drawing creation and editing. Follow these steps:

1. Click the Model tool on the status bar at the bottom of the AutoCAD window.

Your view changes to show the full 3D model with the 2D representations of the model (see Figure 1.14).

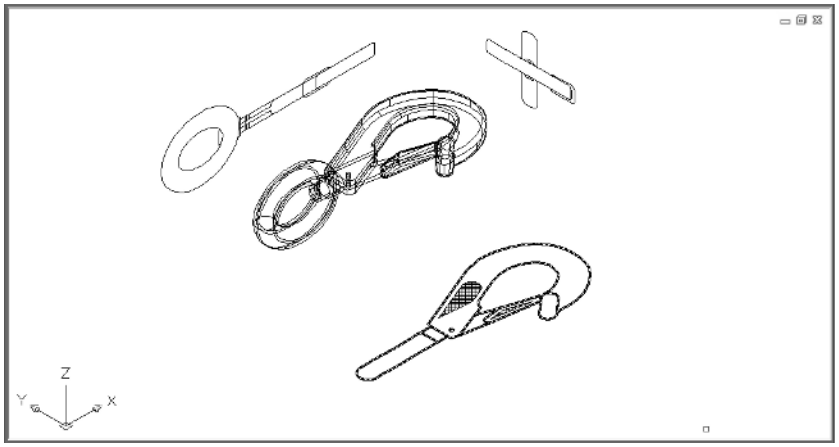


FIGURE 1.14
3D model with 2D representations of the model

2. From the Menu Browser, choose View ➤ 3D Views ➤ Plan View ➤ World UCS. You can also type **PLAN↵W↵**. Your display changes to a two-dimensional view looking down on the drawing, as shown in Figure 1.15.

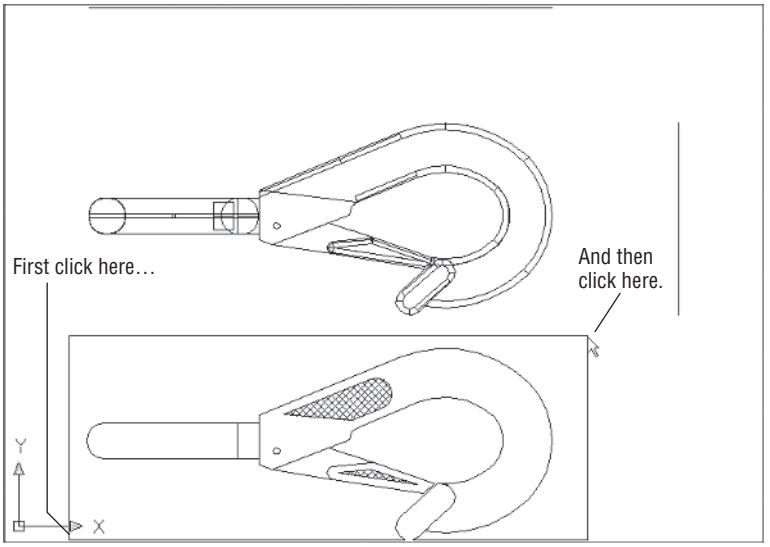


FIGURE 1.15
Placing the zoom window around the clip

3. Click the Zoom tool in the status bar.

You can also click the Window tool from the Zoom flyout in the Home tab's Utilities panel or type the command **Z**↵.

3. The Command window and the dynamic input display show the `Specify corner of window…:` prompt with some options. Look at the top image in Figure 1.15. Move the crosshair cursor to a location similar to the one shown in the figure; then, left-click the mouse. Move the cursor and the rectangle appears with one corner fixed on the point you just picked; the other corner follows the cursor.

4. The Command window and Dynamic Input display now show the `Specify first corner:` and `Specify opposite corner:` prompts. Position the other corner of the zoom window so it encloses the lower image of the clip, as shown in Figure 1.15, and left-click the mouse again. The clip enlarges to fill the screen.

In this exercise, you used the Window option of the Zoom command to define an area to enlarge for your close-up view. You saw how AutoCAD prompts you to indicate first one corner of the window selection and then the other. These messages are helpful for first-time users of AutoCAD. You'll use the Window option frequently—not just to define views, but also to select objects for editing.

Getting a close-up view of your drawing is crucial to working accurately, but you'll often want to return to a previous view to get the overall picture. To do so, choose Previous from the Zoom flyout in the Home tab's Utilities panel.

Do this now and the previous view—the one showing the entire clip—returns to the screen.

You can quickly enlarge or reduce your view by using the Zoom Realtime option of the Zoom command. Follow these steps to change your view with Zoom Realtime:

1. Click the Zoom tool on the status bar; then right-click and select Enter.

   You can also right-click and choose Zoom from the shortcut menu. The cursor changes to a magnifying glass.

2. Place the Zoom Realtime cursor slightly above the center of the drawing area, and then click and drag downward. Your view zooms out to show more of the drawing.

3. While still holding the left mouse button, move the cursor upward. Your view zooms in to enlarge your view. When you have a view similar to the one shown in Figure 1.16, release the mouse button. (Don't worry if you don't get *exactly* the same view as the figure. This is just for practice.)

4. You're still in Zoom Realtime mode. Click and drag the mouse again to see how you can further adjust your view. To exit, you can select another command besides a Zoom or Pan, press the Esc key, or right-click your mouse and choose Exit from the shortcut menu.

5. Right-click now and choose Exit from the shortcut menu to exit the Zoom Realtime command.

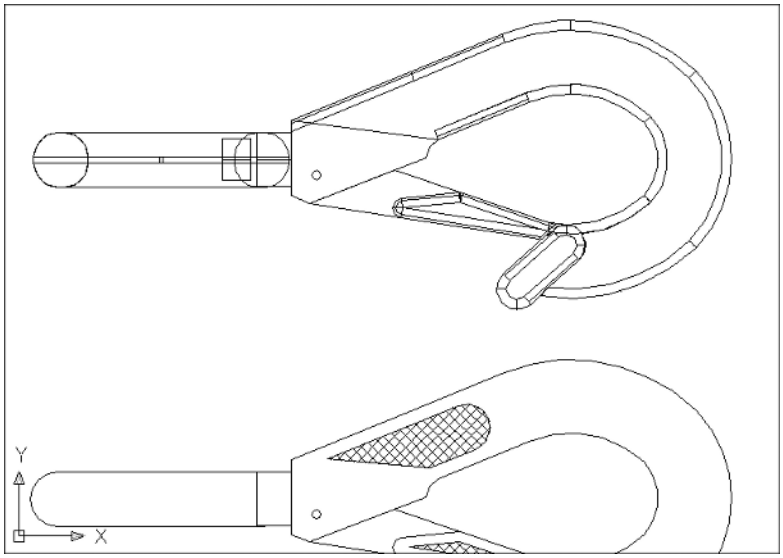


FIGURE 1.16
The final view you want to achieve in step 3 of the exercise

NOTE

If you prefer, you can use the wheel on your mouse to zoom and pan over your view. Roll the wheel to zoom in and out or click and drag the wheel to pan.

As you can see from this exercise, you have a wide range of options for viewing your drawings, just by using a few tools. These tools are all you need to control the display of 2D drawings.

Saving a File as You Work

It's a good idea to save your file periodically as you work on it. As with any Windows program, you can save it under its original name (click the Save tool on the Quick Access toolbar) or under a different name (choose File ➢ Save As from the Menu Browser), thereby creating a new file.

By default, AutoCAD automatically saves your work at 10-minute intervals under a name that is a combination of the current filename plus a number and that ends with the `.sv$` filename extension; this is known as the *Automatic Save* feature. Using settings in the Options dialog box or system variables, you can change the name of the autosaved file and control the time between autosaves. See "The Open and Save Tab" in Appendix A for details.

NOTE

By default, in Windows XP, the Automatic Save file is stored in C:\Documents and Settings*User Name*\Local Settings\Temp\. You can find the exact location for your system by typing **Savefilepath**↵ at the Command prompt. This file location is often set as a hidden folder, so you may need to set up Windows Explorer to display hidden folders before you can get to the Automatic Save file. See Appendix A for information on how to do this.

Making Changes

You'll frequently make changes to your drawings. One of AutoCAD's primary advantages is the ease with which you can make changes. The following exercise shows you a typical sequence of operations involved in changing a drawing:

1. Use the File ➢ Save As Menu Browser option to save the current `Clip.dwg` file under the name MyFirst. For convenience, you can save your files in the `My Documents` folder.

2. From the Home tab's Modify panel, click the Erase tool (the one with a pencil eraser touching paper). This activates the Erase command.

   Notice that the cursor has turned into a small square. This square is called the *pickbox*. You also see `Select objects:` in the Command window and the Dynamic Input display. This message helps remind new users what to do.

3. Move the pickbox over the drawing, placing it on various parts of the clip. Don't click anything yet. Notice that as you hover your cursor over objects with the pickbox, they're highlighted. This helps you see the objects that the pickbox is likely to select should you click the left mouse button.

4. Place the pickbox on the crosshatch pattern of the clip (see Figure 1.17), and click. The crosshatch changes in appearance from a dark highlight to a light highlight. The pickbox and the `Select objects:` prompt remain, indicating that you can continue to select objects.

5. Press ↵. The crosshatch disappears. You've just erased a part of the drawing.

In this exercise, you first issued the Erase command and then you selected an object by using a pickbox to click it. The pickbox tells you that you must select items on the screen, and it shows you what you're about to select by highlighting objects as you hover the cursor over them. Once you've clicked an object or a set of objects, press ↵ to move on to the next step. This sequence of steps is common to many of the commands you'll work with in AutoCAD (see Figure 1.17).

NOTE

You can also click an object or a set of objects and then press the Delete key without using the Erase tool.

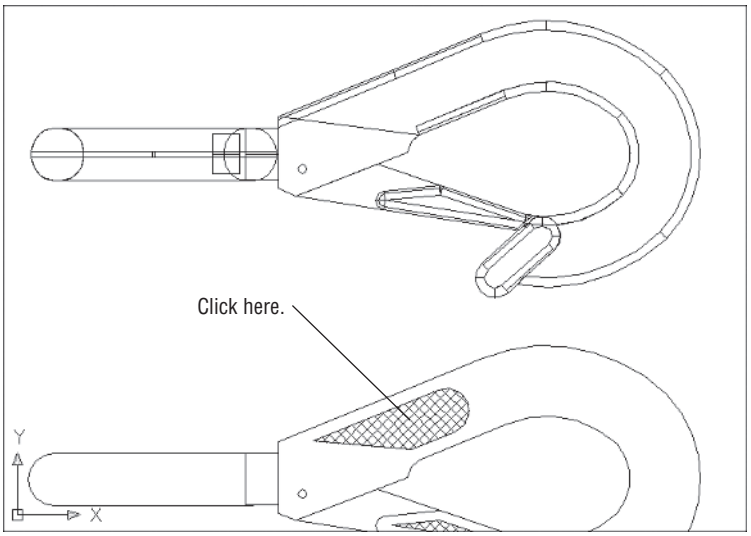


FIGURE 1.17
Erasing a portion of the clip

Working with Multiple Files

You can have multiple documents open at the same time in AutoCAD. This can be especially helpful if you want to exchange parts of drawings between files or if you want another file open for reference. Try the following exercise to see how multiple documents work in AutoCAD:

1. Click the New tool on the Quick Access toolbar to open the Select Template dialog box.

NOTE

If you see the Create New Drawing dialog box after step 1, click the Start from Scratch button and select Imperial; then click OK and AutoCAD will display a default document. You'll learn more about the Create New Drawing dialog box in Chapter 3.

2. Make sure `acad.dwt` is selected, and then click Open.
3. Click the Menu Browser and choose Window ➢ Tile Vertically to get a view of both drawing files. This option in the Menu Browser acts just like its counterpart in other Windows programs allowing for multiple-document editing.

NOTE

When you create a new file in AutoCAD, you're actually opening a copy of a template file, as you saw in step 1. A *template file* is a blank file that is set up for specific drawing types. The `acad.dwt` file is a generic template set up for Imperial measurements. Another template file called `acadiso.dwt` is a generic template useful for metric measurements. Other templates are set up for specific drawing-sheet sizes and measurement systems. You'll learn more about templates in Chapter 6.

Next, let's try drawing a rectangle to see how AutoCAD behaves while drawing objects:

1. Click the Rectangle tool in the Home tab's Draw panel.

   Notice that the Command window and the message at the cursor now shows the following prompt:

   ```
   Specify first corner point or
   ```

   AutoCAD is asking you to select the first corner for the rectangle and, in brackets, it's offering a few options that you can take advantage of at this point in the command. Don't worry about those options right now. You'll have an opportunity to learn about command options in Chapter 2. You also see the same prompt, minus the bracketed options, in the Dynamic Input display at the cursor.

2. Click a point roughly in the lower-left corner of the drawing area, as shown in Figure 1.18. Now, as you move your mouse, a rectangle follows the cursor, with one corner fixed at the position you just selected. You also see the following prompt in the Command window, with a similar prompt in the Dynamic Input display:

   ```
   Specify other corner point or [Area/Dimensions/Rotation]:
   ```

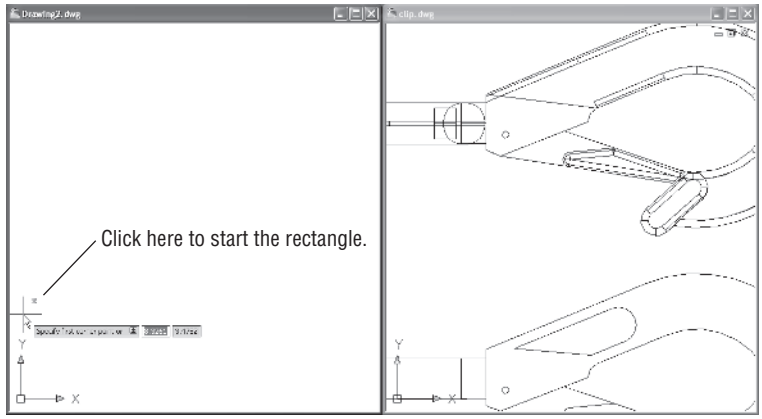


FIGURE 1.18
Selecting the first point of a rectangle

3. Click another point anywhere in the upper-right region of the drawing area. A rectangle appears (see Figure 1.19) . You'll learn more about the different cursor shapes and what they mean in Chapter 2.

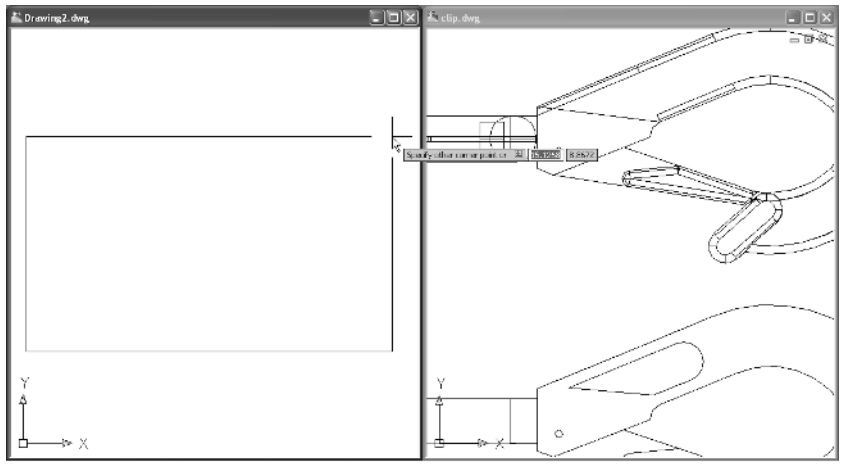


FIGURE 1.19
After you've selected the first point of the rectangle, you see a rectangle follow the motion of your mouse.

4. Let's try copying objects between these two files. Click in the window with the clip drawing to make it active.
5. Click All from the Zoom flyout in the Home tab's Utilities panel to get an overall view of the drawing. You can also click the Zoom tool in the status bar and type **A**↵ (see Figure 1.20).

FIGURE 1.20
The Zoom flyout gives you an overall view of your drawing.

6. Click the 2D version of the clip at the bottom of the drawing to select it. A series of squares and arrows appears on the drawing. These are called *grips,* and you'll learn more about them in the next chapter (see Figure 1.21).
7. Right-click and select Copy.
8. Click inside the other drawing window to make it active.
9. Right-click and select Paste. The clip appears at the cursor in the new drawing.
10. Position the clip in the middle of the rectangle you drew earlier and left-click the mouse. The clip is copied into the second drawing.
11. This ends the exercises for this chapter. Save the file and then exit AutoCAD.

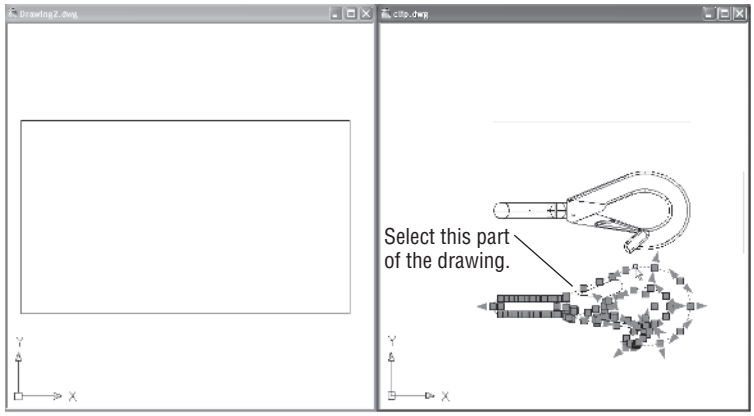


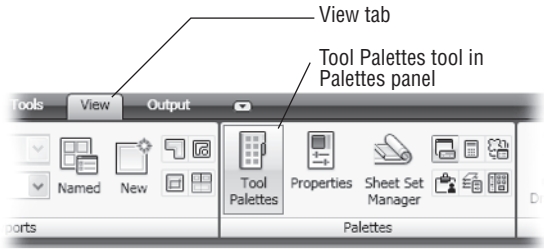
FIGURE 1.21
Grips shown in the 2D drawing.

Now you've had two files open at once. You can have as many files open as you want as long as your computer has adequate memory to accommodate them. You can control the individual document windows as you would any window, using the Window drop-down menu or the window control buttons in the upper-right corner of the document window.

Adding a Predrawn Symbol with the Tool Palette

In the preceding exercise, you saw how you can easily copy an object from one file to another by using the standard Windows Cut and Paste tools. AutoCAD offers a Tool Palettes tool that lets you click and drag predrawn objects into your drawing.

You can open the Tool palettes by clicking the Tool Palettes tool in the View tab's Palettes panel.



Once it's open, you can select a tab in the Tool Palettes window containing the predrawn objects you want to use and then click the specific object you want to add. The object appears at the cursor, ready for you to select a location (see Figure 1.22).

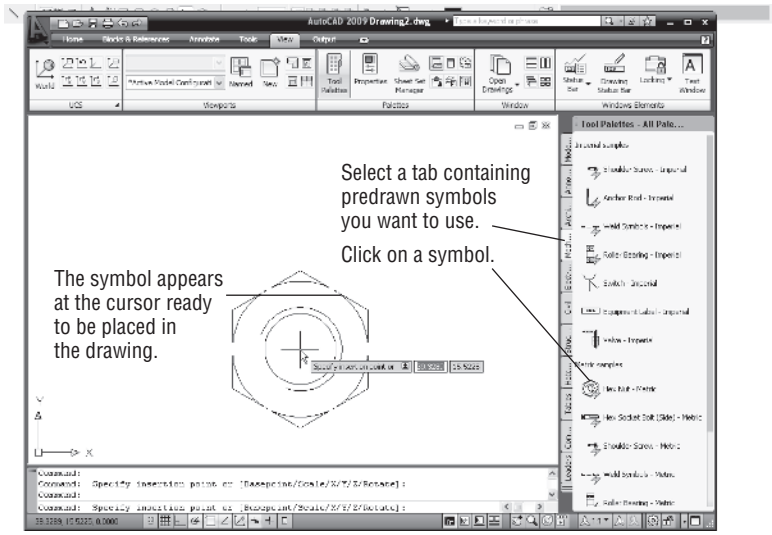

Select a tab containing predrawn symbols you want to use.
Click on a symbol.
The symbol appears at the cursor ready to be placed in the drawing.

FIGURE 1.22
The Tool palettes offer predrawn symbols that you can easily place in your drawings.

In addition to predrawn objects, the Tool palettes offer a way to add fill patterns and other components quickly to your drawing. They're great tools to help you manage your library of custom, predrawn symbols. Chapter 25 shows you how to use and customize the Tool palettes.

The Bottom Line

Using the AutoCAD Window AutoCAD is a typical Windows graphics program that makes use of menus, toolbars, Ribbon panels, and palettes. If you've used other graphics programs, you'll see at least a few familiar tools.

Master It Name the components of the AutoCAD window you can use to select a function.

Getting a Closer Look with the Zoom Command One of the first things you'll want to learn is how to manipulate your views. The Zoom command is a common tool in graphics programs.

Master It Name at least two ways of zooming into a view.

Saving a File As You Work Nothing is more frustrating than having a power failure cause you to lose hours of work. It's a good idea to save your work frequently. AutoCAD offers an autosave feature that can be a lifesaver if you happen to forget to save your files.

Master It How often does the AutoCAD autosave feature save your drawing?

Making Changes and Opening Multiple Files As with other Windows programs, you can have multiple files open and exchange data between them.

Master It With two drawings open, how can you copy parts of one drawing into the other?